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(54) **HANDHELD ELECTRONIC DEVICE AND ASSOCIATED METHOD PROVIDING AVAILABILITY DATA IN A MESSAGING ENVIRONMENT**

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CPC **G06F 3/04817** (2013.01); **H04L 12/581** (2013.01); **H04L 51/04** (2013.01); **H04L 67/24** (2013.01); **H04L 69/24** (2013.01); **H04W 4/16** (2013.01)

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,444,761 A 8/1995 Nagashima
5,515,366 A 5/1996 Chieu et al.

(Continued)

FOREIGN PATENT DOCUMENTS

EP 1009153 A1 6/2000
EP 1176840 A1 1/2002

(Continued)

OTHER PUBLICATIONS

Hiroyuki I.; Takeshi S.; Suguru Y.; Yuji O.; “Webhint: An Automatic Configuration Mechanism for Optimizing World Wide Web Cache System Utilization”; Proceedings of the 1998 Internet Society Conference (INET’98); Jul. 21, 1998.

(Continued)

Primary Examiner — George Eng

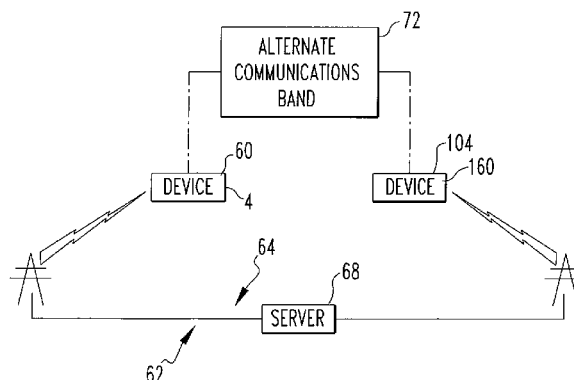
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(57) **ABSTRACT**

An improved handheld electronic device and an associated method are provided in which enhanced information regarding an “availability” of a user of a handheld electronic device is provided to another electronic device in a messaging environment. Such availability data provides step-wise indications of the relative availabilities of one or more users of electronic devices in a messaging environment. The step-wise indications can, for instance, range from an availability level of “currently active” to several levels of nonavailability. The device and method can be incorporated into an existing messaging environment.

20 Claims, 4 Drawing Sheets



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(56)

References Cited

U.S. PATENT DOCUMENTS

5,793,365	A	8/1998	Tang et al.	
5,802,460	A	9/1998	Parvulescu et al.	
5,960,173	A	9/1999	Tang et al.	
6,301,609	B1	10/2001	Aravamudan et al.	
6,317,593	B1	11/2001	Vossler	
6,519,639	B1	2/2003	Glasser et al.	
6,564,261	B1	5/2003	Gudjonsson et al.	
6,577,859	B1	6/2003	Zahavi et al.	
6,606,309	B1	8/2003	Wang	
7,035,865	B2	4/2006	Doss et al.	
7,139,797	B1 *	11/2006	Yoakum et al.	709/204
7,236,472	B2	6/2007	Lazaridis et al.	
7,315,747	B2	1/2008	Klassen et al.	
7,911,987	B2	3/2011	Lazaridis et al.	
8,345,601	B2	1/2013	Lazaridis et al.	
2001/0041590	A1	11/2001	Silberfenig	
2002/0075303	A1	6/2002	Thompson et al.	
2002/0087649	A1	7/2002	Horvitz	
2002/0128036	A1 *	9/2002	Yach et al.	455/552
2002/0143916	A1	10/2002	Mendiola et al.	
2003/0013467	A1	1/2003	Caloud	
2003/0018726	A1	1/2003	Low et al.	
2003/0065721	A1	4/2003	Roskind	
2003/0126213	A1	7/2003	Betzler	
2003/0217098	A1	11/2003	Bobde et al.	
2004/0170263	A1 *	9/2004	Michael et al.	379/201.1
2005/0027716	A1 *	2/2005	Apfel	707/100
2006/0101266	A1	5/2006	Klassen et al.	
2007/0042815	A1	2/2007	Trap	
2008/0261636	A1	10/2008	Lau et al.	

FOREIGN PATENT DOCUMENTS

EP	1233570	A1	8/2002
EP	1331786	A1	7/2003
EP	1385323	A1	1/2004
WO	99/12365	A1	3/1999
WO	02/065250	A2	8/2002
WO	03/034672	A1	4/2003
WO	03/058908	A2	7/2003

OTHER PUBLICATIONS

Squid Developers; "Squid Programmers Guide"; internet article [online] Aug. 11, 2004; retrieved on Aug. 1, 2006 from <http://www.squid-cache.org/Doc/Prog-Guide/>.

Vetter, B. et al.; "An Experimental Study of Insider Attacks for the OSPF Routing Protocol"; 1997; pp. 1 to 17; ICN.

Acampora, A.S. et al.; "Control and Quality-of-Service Provisioning in High-Speed Microcellular Networks"; IEEE Personal Communications Magazine; 1994; vol. 1, No. 2.

Tanembaum, A.; Computer Networks (Fourth Edition); Jan. 1, 2003; p. 7; ISBN: 978-0-13-038488.

Lastoria, G.; Supplementary Search Report from European Application No. 04761845.9; search completed Aug. 22, 2006.

Lastoria, G.; Supplementary Search Report from European Application No. 04761846.7; search completed Aug. 24, 2006.

Lastoria, G.; Search Report from European Application No. 04761847.5; search completed Oct. 11, 2006.

Lastoria, G.; Search Report from European Application No. 08166369.2; search completed Mar. 12, 2009.

Lastoria, G.; Search Report from European Application No. 10156600.8; search completed Apr. 20, 2010.

Lastoria, G.; Search Report from European Application No. 10178664.8; search completed Oct. 14, 2010.

Lastoria, G.; Search Report from European Application No. 10184719.2; search completed Nov. 24, 2010.

* cited by examiner

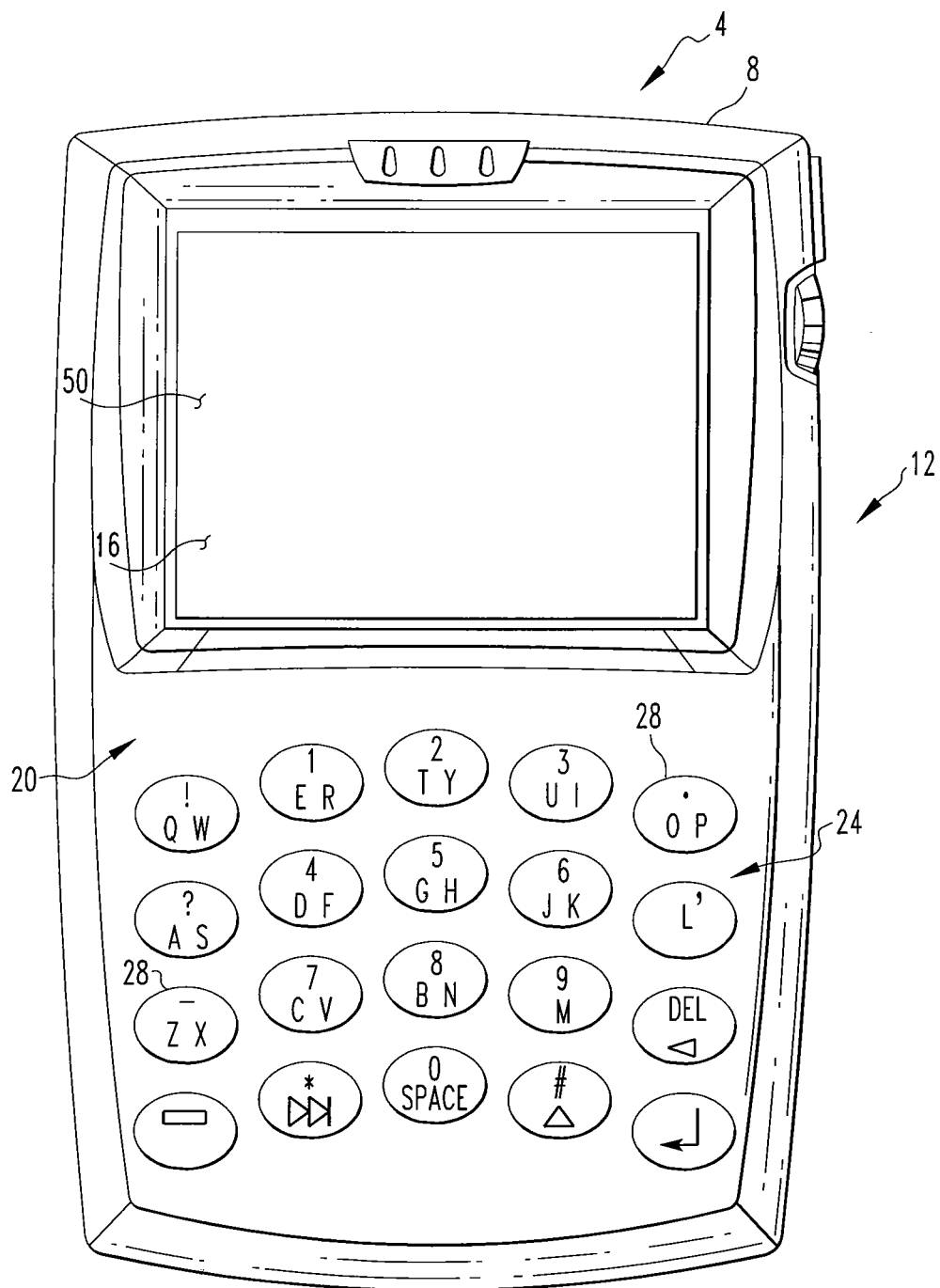


FIG. 1

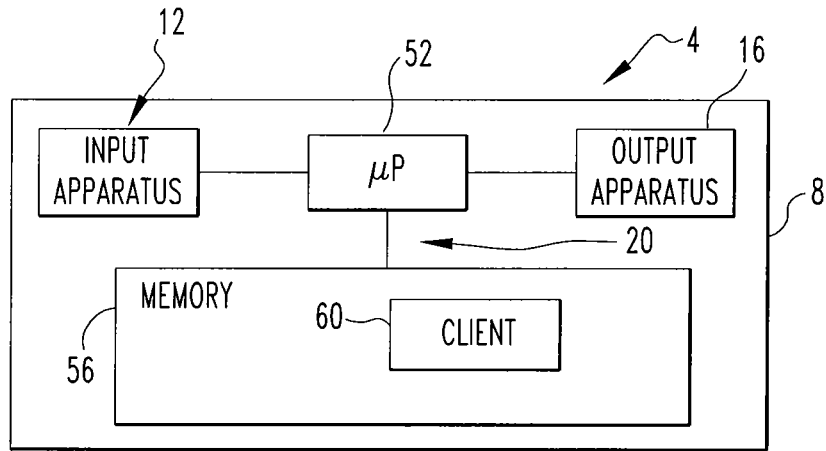


FIG. 2

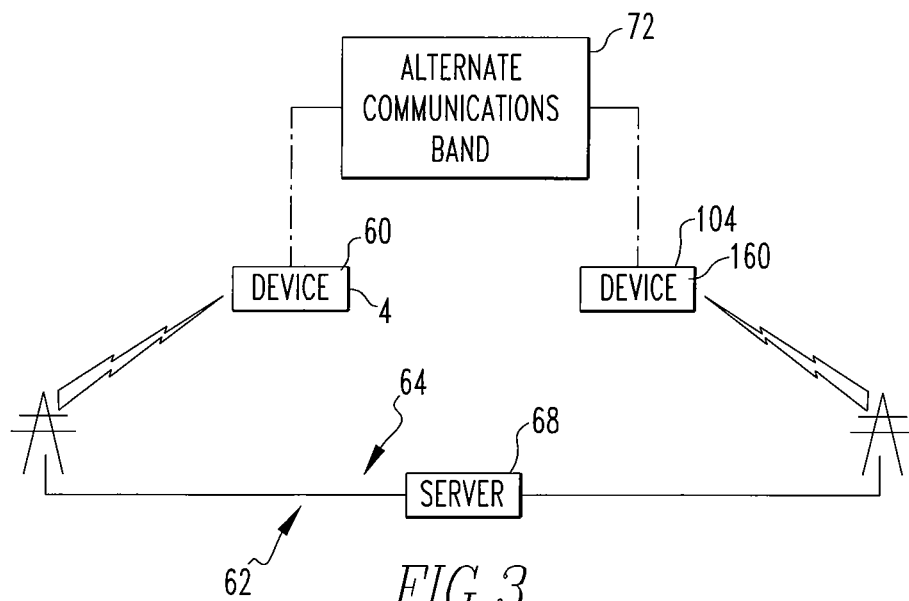


FIG. 3

76 78

Quick Messaging: 'Available'			12:30 PM
ONLINE (25 TOTAL)		Availability	Last Msg
84 ✓	Tom Jones	-available 96	06:50 pm
88 ☎	Bud Auto 80	-on the phone	11:20 am
84 ⌚	Evil Knievel 80	-idle 96	Yesterday
88 ✓	Madonna 80	-available 96	11:30 am
84 ✓	Mr Smith	-currently typing	4 minutes
88 🗣	Harry Smith	-in meeting	09:30 am
84 ?	Bert Smith	-ignoring data	10:35 am
88 ✓D	Mike Ham	-data delivered	12:23 pm
84 ✓R	My Wife	-data read	12:29 pm
88 📠	My boss	-unread data	12:30 pm
84 🚫	Friend A	-turned off	09:40 am
88 🚫QM	Friend B	-Blocked QM 96	Yesterday

FIG. 4

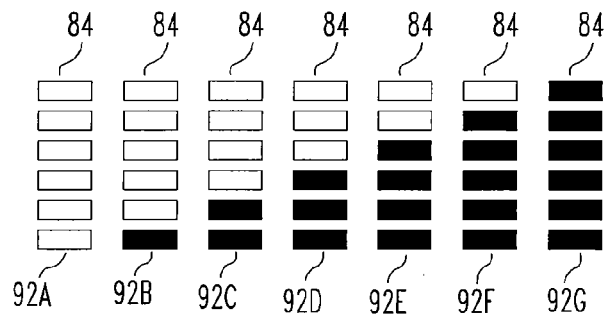


FIG. 5

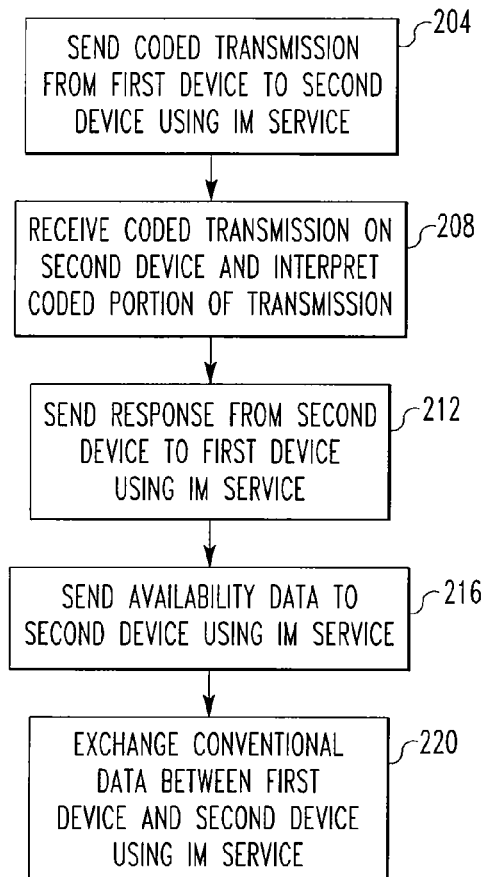


FIG. 6

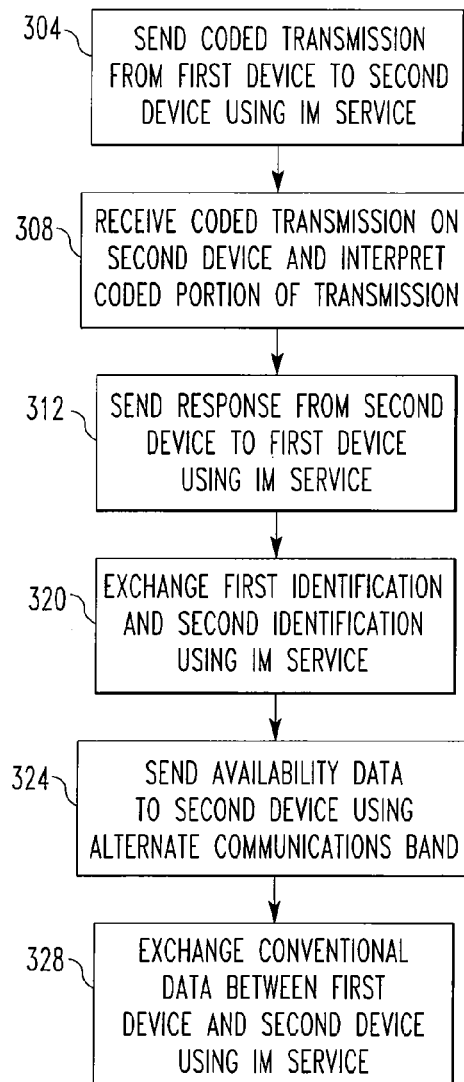


FIG. 7

HANDHELD ELECTRONIC DEVICE AND ASSOCIATED METHOD PROVIDING AVAILABILITY DATA IN A MESSAGING ENVIRONMENT

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation in part of U.S. Utility patent application Ser. No. 10/942,305, filed Sep. 16, 2004, entitled Electronic Device and Associated Method Providing Availability Data in a Messaging Environment, (now U.S. Pat. No. 7,315,747, issued Jan. 1, 2008) which application claims the benefit of U.S. Provisional Application No. 60/503,367 entitled "A Method for Creating a Peer-to-Peer Quick Messaging Solution Without Using an Instant Messaging Server," which was filed on Sep. 16, 2003, and U.S. Provisional Application No. 60/503,366 entitled "Activity Proxying Presence in Mobile Instant Messaging," which was filed on Sep. 16, 2003. The disclosure of U.S. Provisional Application No. 60/503,367 and the disclosure of U.S. Provisional Application No. 60/503,366 are hereby incorporated into the present application by reference.

BACKGROUND OF THE INVENTION

1. Field of the Invention

The invention relates generally to handheld electronic devices and, more particularly, to a handheld electronic device and a method and protocol for providing information representative of an availability of a user in a messaging environment.

2. Background of the Invention

Numerous types of handheld electronic devices are known. Examples of such handheld electronic devices include, for instance, personal data assistants (PDAs), handheld computers, two-way pagers, cellular telephones, and the like. Such handheld electronic devices are generally intended to be portable, and thus are relatively small. Many handheld electronic devices also feature wireless communication capability, although many such handheld electronic devices are stand-alone devices that are functional without communication with other devices. With advances in technology, handheld electronic devices are being configured to include greater numbers of features while having relatively smaller form factors.

Electronic devices, including handheld electronic devices, are capable of numerous types of communication. One type of communication is "messaging", and one type of messaging is "instant messaging" which enables a first device to send a message to a second device. Many instant messaging services, both public and private, are available today. With most all instant messaging services, a given electronic device is provided with an interface that identifies various other electronic devices with which the given electronic device can communicate. If one of the other electronic devices has been logged out of the instant messaging service or has been switched off, the interface typically will identify the "presence" of such electronic device as being "unavailable". Otherwise, the other electronic devices are listed as having a "presence" of "available" unless a user of one of the other electronic devices has manually changed his or her presence to a different setting, such as "out to lunch". While instant messaging protocols and devices using the protocols have been generally effective for their intended purposes, such instant messaging protocols and devices have not been without limitation.

Generally, all instant messaging services employ protocols that were written for desktop devices, i.e., devices that generally are not portable. In an environment that includes handheld electronic devices, i.e., devices that are portable and generally remain switched on, the old protocol presence designations of "available" and "unavailable" are imprecise since such a handheld electronic device is nearly always listed as "available", even late at night when a user clearly is not available, say, for instant messaging. Such an imprecise indication of a user's availability is generally undesirable in a messaging environment since it is generally desired that a recipient of a message be available to read and respond to the message. The communication of messages to an unavailable user wastes the time of the sender of the messages and also wastes communication bandwidth. It thus would be desirable to provide an improved method and apparatus for providing more accurate information regarding the availability of a user of a handheld electronic device in a messaging environment. Such an improved method and apparatus desirably might be capable of use with existing instant messaging services.

SUMMARY OF THE INVENTION

An improved handheld electronic device and an associated method are provided in which enhanced information regarding an "availability" of a user of a handheld electronic device is provided to another electronic device in a messaging environment. Such availability data provides step-wise indications of the relative availabilities of one or more users of electronic devices in a messaging environment. The step-wise indications can, for instance, range from an availability level of "currently active" to several levels of nonavailability. The device and method can be incorporated into an existing messaging environment.

Accordingly, an aspect of the invention is to provide an improved handheld electronic device, a messaging method, and a protocol in which a relatively descriptive indication of a user's availability in a messaging environment is provided to other users in the environment.

Another aspect of the invention is to provide an improved method of helping users of a messaging service to communicate with other users by having an awareness of the relative availabilities of the other users of handheld electronic devices for messaging.

Another aspect of the invention is to provide an improved method of helping users of a messaging service to reduce the amount of time that otherwise is wasted in attempting to communicate with other users of the messaging service by providing an indication as to whether or not the other users are likely to respond to messages.

Another aspect of the invention is to provide an improved method of reducing wasted bandwidth in a messaging environment by reducing the number of sent messages that are unlikely to receive a response from another user.

Another aspect of the invention is to provide an improved handheld electronic device, a messaging method, and a protocol in which a relatively descriptive indication of a user's availability in a messaging environment is provided to other users in the environment and that can be incorporated, at least in part, into an existing messaging service.

Accordingly, an aspect of the invention is to provide an improved method of enabling communication of enhanced data between a first device and a second device, with the first device being a handheld electronic device having a wireless communication capability, and with the second device being an electronic device. The first device and the second device are capable of communication with one another in a

first communications band. The general nature of the method can be stated as including enabling a communication between the first device and the second device in a second communications band, and enabling a transmission of enhancement data between the first device and the second device in the second communications band.

Another aspect of the invention is to provide an improved method of enabling communication of enhancement data between a first device and a second device, with the first device being a handheld electronic device having a wireless communication capability, and with the second device being an electronic device. The general nature of the method can be stated as including enabling a communication between the first device and the second device, enabling a determination responsive to said communication that the first device and the second device are capable of communicating enhancement data, and enabling a transmission of enhancement data between the first device and the second device.

BRIEF DESCRIPTION OF THE DRAWINGS

A full understanding of the invention can be gained from the following Description of the Preferred Embodiment when read in conjunction with the accompanying drawings in which:

FIG. 1 is an exemplary top plan view of a handheld electronic device in accordance with the invention which can be used in conjunction with an improved method in accordance with the invention;

FIG. 2 is a schematic view of the handheld electronic device of FIG. 1;

FIG. 3 is a schematic view of the handheld electronic device of FIG. 1 and another device in a messaging environment;

FIG. 4 is an exemplary view of an output provided in accordance with the method of the invention in the messaging environment;

FIG. 5 is an exemplary view of an alternate icon that can be provided as part of the output;

FIG. 6 is an exemplary flowchart of a portion of an improved method related to the devices of FIG. 3; and

FIG. 7 is another exemplary flowchart of a portion of another improved method related to the device of FIG. 3.

Similar numerals refer to similar parts to the specification.

Description of the Preferred Embodiment

An improved handheld electronic device 4 in accordance with the invention is indicated generally in FIG. 1 and is depicted schematically in FIG. 2. The exemplary handheld electronic device 4 includes a housing 8 upon which are disposed an input apparatus 12, an output apparatus 16 and a processor apparatus 20. The input apparatus 12 includes a keypad 24 that can be said to include a plurality of keys 28.

The output apparatus 16 includes a display 50. The output apparatus 16 can additionally include, for instance, additional indicators such as lights, and the like, and can additionally include an audible output such as a speaker as well as other output devices.

The processor apparatus 20 includes a processor 52 that can be, for instance, and without limitation, a microprocessor (μ P), and it is responsive to inputs from the input apparatus 12 and provides output signals to the output apparatus 16. The processor apparatus 20 further includes a memory 56 that includes a client 60 stored therein. The exemplary client 60 is a messaging routine that can provide a messaging capability on the device 4. It is understood that the memory 56 likely

includes a number of other routines that are not expressly mentioned herein. As employed herein, the expression "a number of" and variations thereof shall refer broadly to any nonzero quantity including a quantity of one. The processor 52 interfaces with the memory 56, and the client 60 is executable on the processor 52. A more detailed discussion of the generation and provision of availability information is provided in commonly owned U.S. patent application Ser. Nos. 10/942,749 and 10/942,167 filed on Sep. 16, 2004, entitled "Handheld Electronic Device and Associated Method Providing Availability Data in a Messaging Environment" and identified by; and entitled "A Method For Creating A Peer-To-Peer Immediate Messaging Solution Without Using An Instant Messaging Server" and identified by , the disclosures of which are hereby incorporated into the present application by reference.

The device 4 further includes a wireless communication system. As can be seen in FIG. 3, the device 4 and, more specifically, the client 60 can interface with a messaging service 62 to wirelessly provide the messaging capability on the device 4. In the depicted exemplary embodiment, the messaging service 62 provides an instant messaging capability on the device 4 and on the other electronic devices having clients that are subscribers to the messaging service 62. The messaging service 62 is schematically depicted as including a server 68 and as providing communication within a first communication band 64. The first communication band 64 can generally be said to include the preexisting protocol of the messaging service 62 as transmitted through the predetermined communication bandwidth through which the messaging service 62 is provided to its subscribers.

FIG. 3 further depicts another device 104 as being a device having a client that is another subscriber to the messaging service 62. Specifically, the device 104 is an electronic device having a client 160 thereon which can communicate with the messaging service 62 to provide a messaging capability on the device 104. While the exemplary device 104 is depicted as having a wireless connection with the messaging service 62, it is understood that the device 104 may employ a non-wireless communication capability and still not depart from the concept of the invention. It is further understood that while only the two devices 4 and 104 are depicted in FIG. 3 as being subscribers to the messaging service 62, many more subscribers to the messaging service 62 exist but are not expressly depicted in FIG. 3.

In accordance with an aspect of the improved method of the invention, the protocol of the messaging service 62, as provided on the devices 4 and 104 by the clients 60 and 160, respectively, provides to users of the devices 4 and 104 enhanced data regarding the likely availability of the other users of the other devices that are subscribers to the messaging service 62. That is, a user of a device 4, 104 having a client 60, 160 that is a subscriber to the messaging service 62 can receive enhanced data regarding the likely availability of the other subscribers to the messaging service 62 with which the user has already developed some type of electronic relationship. The data regarding availability can, for example, be in a stepped form that provides discrete levels of availability. Other formats for the availability data can be provided without departing from the concept of the invention.

For example, the stepped availability of a user of a device 4 can be represented by, for instance, a level from among a plurality of levels of availability and a plurality, for instance, of levels of nonavailability, depending upon the configuration of the device 4 and the client 60 thereon. The device 4 may, for instance, include a telephone capability, an e-mail capability, an organizer/calendar capability, a wireless point-to-point

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communication capability such as provided by the Bluetooth protocol or other protocol, an instant messaging capability, a push-to-talk communication capability, and/or many other capabilities. The detected degree of usage of the device 4 and/or of the various capabilities of the device 4 can be employed to generate the availability data which is reflective of an availability at any given time of a user of the device 4.

In the present exemplary embodiment 104, the availability data can be at any of six levels of availability, i.e., A(1), A(2), A(3), A(4), A(5), and A(6), with A(6) being the highest level of availability, or at any of three levels of nonavailability, i.e., and for example, “suspend”, “unavailable”, and “offline”. Each such level can have a general description of the corresponding activity status on a device such as is provided in Table 1.

TABLE 1

Availability Level	General Description of Activity Status
A(6)	Currently active on messaging application, i.e., client
A(5)	Currently actively using device
A(4)	Sporadically using device
A(3)	Less frequent device use
A(2)	Infrequent device use
A(1)	No recent device use
Suspend	On phone or on data call
Unavailable	Device unreachable (for instance, powered off or out of coverage)
Offline	Not logged into messaging service or client, or user is blocked.

As a general matter, the “availability” of a user of a device 4 can be determined in a general fashion, or at least estimated, from the particular activity status of the device 4. For instance, if a user is actively using the messaging client 60 on the device 4, such as would correspond with the availability level A(6), the user likely is highly available to receive and respond to additional messages received through the messaging service 62 from other subscribers to the messaging service 62. Similarly, if the user has not used the device 4 for a predetermined period of time, such as might correspond with the availability level A(1), the user may be unlikely to respond to messages sent through the messaging service 62. If another subscriber is considering sending a message to the aforementioned user, the subscriber may consult the availability data provided to him regarding the user in order to gauge the likelihood that the user will be available for and be able to respond to a message through the messaging service 62. If the subscriber sees that the other user’s availability is low, the subscriber may refrain from sending a message to the user on the assumption that the user would not respond to such a message. This would save the subscriber from wasted time and effort and would also save wasted usage of transmission bandwidth on the messaging service 62. The protocol described herein thus provides a plurality of levels of availability that are based at least in part upon the activity status of a device 4 and that provide to other subscribers an understanding of the potential for a user of the device 4 to respond to messages sent through the messaging service 62.

As suggested above, a plurality of nonavailability levels can be provided. The nonavailability level “suspend” might be used to refer to a situation in which a telephone event such as a telephone call is occurring on the device 4. In such a circumstance, the subscribers to the messaging service 62 would understand that the user of the device 4 on which the telephone event is occurring is temporarily not available but likely will be available as soon as the telephone call is ended.

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The nonavailability level “offline” might indicate to subscribers that the user of the device 4 has affirmatively terminated his or her availability, and that substantially no present possibility exists of the user receiving or responding to a message from a subscriber. The nonavailability level “unavailable” might indicate that the user of the device 4 is presently not available, but that the reason for such nonavailability is not specifically known, and that the user potentially could become available again at any time. The protocol described herein thus also provides a plurality of descriptive levels of nonavailability that provide to other subscribers an understanding of the potential for an availability of a user of a device to go from nonavailable to available.

Numerous different activity statuses of the device 4 can be employed in determining an availability status for the device 4. Certain specific activities on the device 4 can trigger the generation of a specific availability level for transmission to the other subscribers to the messaging service 62. Certain other activities can cause the current availability level to be altered by a specific degree, i.e., by increasing or decreasing the current availability level to a predetermined extent. An exemplary set of activities on the device 4 and their corresponding exemplary results on the availability level of the device 4 are provided in Table 2. It is noted that a listed result such as “A(−1)” means that the current activity level is to be dropped by one level. A listed result such as “A(1)” means that the activity level is to be changed from whatever is its current value to a value of A(1). It is noted that Table 2 is not intended to be exhaustive, and that numerous other activities and other results can be provided.

TABLE 2

Activity	Result on Availability Level
Device stays in holder for 10 minutes	A(−1)
Device stays in holder for 3 minutes with new messages not being read.	A(−1)
Profile changes from alert mode to quiet mode	A(−2)
Handheld receives a phone call	Suspend
Handheld places a phone call	Suspend
Compose an email to me	A(6) provided to me A(5) provided to everybody else
Compose an email to somebody else	A(5)
Compose an Instant message to me	A(6)
Compose an Instant Message to somebody else	A(6)
Turn off radio	Unavailable
Turn on radio	A(1)
Auto shut-off	Unavailable
Auto power on	A(1)
Manual power on	A(4)
Appointment in Calendar	A(−2)
Meeting in calendar (with other attendees)	A(−4)
Turn off cell phone	A(−4)
Send/receive a Data Call	Suspend for 5 minutes
Radio turned off due to low battery	Unavailable
Read a received email, or SMS	A(+1), max A(5)
Read a received IM	A(6)

From the activity in Table 2 “compose an email to me”, it can be seen that the intended recipient of the email, i.e., “me”, will receive an availability level of A(6) for the user composing the email, and the other subscribers will receive an availability level of A(5) for the user composing the email. This indicates that the availability level can be tailored to specific subscribers to the messaging service 62 in specific circumstances. It is understood that the designation “IM” employed in the instant application refers generally to the expression “instant message” and variations thereof, and is generally intended to refer to the messaging service 62 or to a data

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transmission provided on the messaging service 62, although the designation "IM" is not intended to limit the teachings herein strictly to an instant messaging environment, and the teachings rather can be applied in a variety of messaging environment.

As can be seen in FIG. 4, a subscriber to the messaging service 62 may see, for example, the output 78 provided by the user interface 76 on his device 104. For instance, the subscriber who is the user of the second device 104 may see the output 78, and the output 78 would include an indication of the various availability levels of the various other users with whom the user of the device 104 has already established an electronic relationship, such as the user of the first device 4. The exemplary output 78 includes a listing of contacts 80, i.e., the other subscribers with whom an electronic relationship has already been established, as well as an indication of the level of availability of each contact 80. In the present example, the indication of the level of availability is provided both by an availability icon 84 and by a string value 96. Each of the exemplary availability icons 84 in FIG. 4 is a descriptive icon 88, meaning that it provides a general depiction of the availability of the user as determined by the specific activity status on the corresponding device. The corresponding exemplary string value 96 is depicted herein as being a linguistic expression that corresponds generally with the descriptive icon 88 and with the activity status of the other user.

The availability of the other subscribers can, however, be expressed in other fashions without departing from the concept of the invention. For instance, FIG. 5 depicts a plurality of availability icons 84 that are variable icons 92A, 92B, 92C, 92D, 92E, 92F, and 92G. The variable icons 92A, 92B, 92C, 92D, 92E, 92F, and 92G are depicted as each including a set of bars that either are filled in or are empty in a variable or graduated fashion depending upon the availability level. For instance, the variable icon 92A may correspond with activity level of nonavailable, the variable icon 92B may correspond with the activity level A(1), and so forth through the variable icon 92G which may correspond with the activity level A(6). Numerous other types of variable icons can be employed, such as icons that are lit at varying levels of brightness, that depict a water glass as gradually becoming more full with or less full of a liquid, and the like. Such variable icons 92A, 92B, 92C, 92D, 92E, 92F, and 92G can be employed, for instance, in the place of either or both of the descriptive icons 88 and the string values 96. It is noted that all of the availability icons 84 and string values 96 are stepped indications representative of predetermined stepped availability levels. Other ways of presenting availability information can be employed without departing from the concept of the invention.

As can be understood, the availability data may, for instance, be sent from one device to another at particular times, rather than being continuously updated. For instance, the availability data may be sent only after an expiration of a predetermined duration of time, such as ten minutes, for example. Such periodic transfer of availability data will save transmission bandwidth while providing availability data that is generally up to date. Alternative, or in addition thereto, the availability data concerning a device 4, 104 may be transmitted more or less immediately upon the occurrence of a predetermined event on the device 4, 104, such as the occurrence of a telephone event on the device 4, 104, or such as the occurrence of an event that would affect the wireless capability of the device 4, 104 such as from a powering off of the device 4, 104 or a logging out by the user from the client 60 or the messaging service 62.

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The availability data provided by the protocol and method presented herein typically is generated and transmitted automatically, i.e., without a need for an affirmative action by the user to select an availability level or an activity status. This is particularly useful in the environment of a handheld electronic device 4, 104 because, for instance, a person receiving a telephone call on the handheld electronic device 4, 104 typically will be unable at that moment to manually change an availability level. Specifically, a person receiving a telephone call likely will want to accept the telephone call without manually changing an availability level.

It is also noted that the determination of an availability of a device 4, 104 can be incorporated with other data stored on the device 4, 104 or available to the device 4, 104. For instance, a device 4, 104 may include a calendar function that stores meetings and the like. Upon determining, for instance, that a meeting is scheduled to begin at a specific time, and upon detecting that the specific time has occurred, the device 4, 104 may generate a resultant availability level that is relatively low or is a level of unavailability based upon the user being in the scheduled meeting. The resultant availability level potentially could be tailored by the user depending upon, for instance, the importance of the meeting and/or the need to not be interrupted during the meeting. Other uses will be apparent.

The protocol described herein can be employed in various messaging environments, such as instant messaging environments and other messaging environments, as well as, for instance, messaging environments that employ or could usefully employ presence information and are generally available in a mixed environment of fixed and portable electronic devices. It is understood, however, that known messaging protocols and messaging services are not currently configured to provide for the transfer of enhancement data which would be representative of the availability of the various subscribers to the messaging services. In accordance with an aspect of the invention, the protocol described herein can be implemented, at least in part, on such preexisting messaging services 62.

As a general matter, enhancement data that is reflective of an availability of a user of a device can be provided between a pair of devices 4, 104 that are subscribers to a known messaging service 62 if the devices 4, 104 are in some fashion capable of sending and/or receiving availability data. Preexisting devices 4, 104 having preexisting clients that are subscribers to preexisting messaging services 62 generally do not have the capability to communicate such availability data; however, it is possible for a preexisting device 4, 104 to have or receive an upgraded client 60, 160, i.e., one that is capable of communication of availability data. Such an upgraded client 60, 160 can be provided in any of a variety of ways, such as by providing it in a download to the device, providing it on a machine readable medium, and in many other fashions. As a general matter, after an upgraded client 60, 160 is loaded onto a preexisting device 4, 104 on a preexisting messaging service 62, the upgraded client 60, 160 will begin to try to determine which of the other clients 60, 160 with which an electronic relationship has already been established are also upgraded clients 60, 160 capable of communication of availability data.

FIGS. 6 and 7 depict flowcharts that set forth the exemplary ways in which the methods of providing availability data set forth herein can be implemented, i.e., bootstrapped, into a preexisting messaging service 62 which, by way of example herein, is an instant messaging service 62. A first method of providing the new protocol and methods described herein on a preexisting messaging service 62 is depicted in FIG. 6.

Once the upgraded client **60, 160** has been loaded onto a preexisting first device **4**, such as was mentioned above, the upgraded client **60, 160** then sends a coded transmission, as at **204**, via the preexisting messaging service **62** to a second preexisting device **104** having a client **60, 160** on the preexisting messaging service **62**. In this regard, the message could be coded to include, for example, special characters or specially formatted white space, i.e., spaces and tabs, that can be transmitted over the communications band of the preexisting messaging service **62**. The coding may be such that an upgraded client **60, 160**, such as one capable of sending and/or receiving availability data, on the second device **104** would recognize the coding as an invitation from the client **60, 160** on the first device **4** to enter into an electronic negotiation for the transmission of activity data between the first device **4** and the second device **104**. The coding may also be such that a non-upgraded client **60, 160**, such as one that is not capable of sending and/or receiving availability data, would simply ignore the coding.

In the present example, however, it is assumed that upon receiving the message on the second device **104**, as at **208**, the client **60, 160** thereon is an upgraded client **60, 160** that is capable of interpreting the coded portion of the message as an invitation from the first device **4** to enter into a negotiation with the first device **4**. The client **60, 160** on the second device **104** then sends, as at **212**, a response to the first device **4** using the preexisting messaging service **62** to indicate that the second device **104** includes a client **60, 160** capable of handling availability data, and the upgraded clients **60, 160** on the first and second devices **4** and **104** enter into a negotiation as to how availability data will be transmitted therebetween. For instance, the negotiation may determine that the availability data is to be sent over the preexisting messaging service **62** between the first and second devices **4** and **104** in a specific coded fashion or in any of a variety of other fashions.

The first device **4** then sends, as at **216**, a signal representative of availability data over the preexisting messaging service **62** to the second device **104**. The first and second devices **4** and **104** also exchange, as at **220**, conventional data over the preexisting messaging service **62**, if such a communication is desired. It thus can be seen that by enabling an upgraded client **60, 160** to use a preexisting messaging service **62** to locate other upgraded clients **60, 160**, the upgraded clients **60, 160** can exchange availability data over the preexisting messaging service **62** in addition to exchanging conventional data such as messages over the same preexisting messaging service **62**.

Another method of providing the new protocol described herein on a preexisting messaging service **62** is depicted in FIG. 7. The method of FIG. 7 is similar to the method of FIG. 6, except that the availability data is shown in FIG. 7 as being communicated between the first and second devices **4** and **104** via an alternate communications band **72** (FIG. 3), which can be any communications band other than the communications band of the preexisting messaging service **62**.

Specifically, a coded transmission is sent, as at **304**, via the preexisting message service **62** from the upgraded client on the first device **4** to the upgraded client **60, 160** on the second device **104**. The coded transmission is received on the second device **104**, as at **308**, and is interpreted by the upgraded client **60, 160** thereon. The second device **104** then sends, as at **312**, a response via the preexisting message service to the first device **4** requesting a negotiation.

At **320**, however, the first device **4** and the second device **104** exchange alternate identifications for the purpose of identifying an alternate communications band **72** and for identifying the first device **4** and the second device **104** on the alternate communications band **72**. Specifically, the first

device **4** transmits one or more first identifications to the second device **104**, and the second device **104** transmits one or more second identifications to the first device **4**. The first and second identifications can be, for example, telephone numbers, IP addresses, PINs, e-mail address, instant messaging user-IDs, and the like that would identify the first device **4** and the second device **104**, respectively, on another network such as a telephone network, a global communications network, private or public messaging network, or other network on an alternate communications band **72** on which the first device **4** and the second device **104** are capable of communication with one another.

Upon performing the negotiation, in which an alternate communications band **72** is selected between the first and second devices **4** and **104**, the availability data is sent, as at **324**, between the first and second devices **4** and **104** over the alternate communications band. Conventional data can then be exchanged, as at **328**, over the preexisting messaging service if such communication of data, such as a message, is desired.

The protocol and methods of exchanging availability data set forth herein thus advantageously can be implemented onto a preexisting messaging services **62**. As set forth above, the availability data can be sent periodically, such as upon the occurrence of a predetermined event or an expiration of a predetermined duration of time, or otherwise. Of course, a new messaging service **62** could be established that provides the protocol herein for the communication of availability data between devices.

While specific embodiments of the invention have been described in detail, it will be appreciated by those skilled in the art that various modifications and alternatives to those details could be developed in light of the overall teachings of the disclosure. Accordingly, the particular arrangements disclosed are meant to be illustrative only and not limiting as to the scope of the invention which is to be given the full breadth of the claims appended and any and all equivalents thereof.

What is claimed is:

1. A method of enabling communication of availability data between a first device and a second device, the first device being a handheld electronic device having a wireless communication capability, the second device being an electronic device, the first device and the second device being capable of communicating with one another in a first communications band using a messaging service, the method comprising:

communicating a message indicating capability of sending availability data between the first device and the second device in the first communications band using the messaging service;

determining, based on communicating the message, a second communications band between the first device and the second device for exchanging the availability data; and

the first device sending, based on the determining the second communications band, availability data to the second device over the second communications band while enabling communications using the messaging service in the first communications band.

2. The method of claim 1, wherein determining the second communications band comprises exchanging, using the messaging service based on communicating the message, a first identification of the first device and a second identification of the second device between the first device and the second device, the first identification and the second identification

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each being identifiers that enable the first device and the second device, respectively, to be identified on the second communications band.

3. The method of claim 2, wherein the second device is a handheld electronic device.

4. The method of claim 1, wherein the second device is a handheld electronic device.

5. The method of claim 1, wherein the availability data is representative at least in part of a degree of relative availability of a user of the first device.

6. The method of claim 5, wherein the availability data is representative at least in part of a stepped availability of a user of one of the first device and the second device.

7. The method of claim 1, wherein determining the second communications band comprises determining that each of the first device and the second device are capable of at least one of generating and interpreting the availability data.

8. The method of claim 7, further comprising exchanging, based on the determining the second communications band, between the first device and the second device a first identification of the first device and a second identification of the second device, the first identification and the second identification each being identifiers that enable the first device and the second device, respectively, to be identified on the second communications band.

9. The method of claim 8, further comprising determining that the first device and the second device are capable of at least one of generating interpreting the availability data comprises communication of a signal in the first communications band wherein at least a portion of the signal is adapted to be communicated over the messaging system and indicates that the one of the first device and the second device is capable of at least one of generating and interpreting of availability data.

10. The method of claim 8, wherein the first and second identifications are anyone or more of telephone numbers, Internet protocol (IP) addresses, personal identification numbers (PINs), e-mail addresses, and instant messaging user identifiers (IDs).

11. A handheld electronic device with a wireless communication capability comprising:

a processor apparatus including a processor and a memory; an input apparatus;

an output apparatus; and

the memory including a routine stored therein, the routine being operable for enabling communication of availability data between the handheld electronic device and a second device, the second device being an electronic device, the handheld electronic device and the second device being capable of communication with one another in a first communications band using a messaging service, the routine comprising computer executable instructions for:

communicating a message indicating capability of sending availability data between the handheld electronic device and the second device in the first communications band using the messaging service;

determining, based on communicating the message, a second communications band between the handheld electronic device and the second device for exchanging availability data; and

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sending, based on the determining the second communications band, availability data the second device over the second communications band while enabling communications using the messaging service in the first communications band.

12. The handheld electronic device of claim 11, wherein determining the second communications band comprises exchanging, using the messaging service based on communicating the message, a first identification of the handheld electronic device and a second identification of the second device between the handheld electronic device and the second device, the first identification and the second identification each being identifiers that enable the handheld electronic device and the second device, respectively, to be identified on the second communications band.

13. The handheld electronic device of claim 12, wherein the second device is a handheld electronic device.

14. The handheld electronic device of claim 11, wherein the second device is a handheld electronic device.

15. The handheld electronic device of claim 11, wherein the availability data is representative at least in part of a degree of relative availability of a user of the handheld electronic device.

16. The handheld electronic device of claim 15, wherein the availability data is representative at least in part of a stepped availability of a user of one of the handheld electronic device and the second device.

17. The handheld electronic device of claim 11, wherein determining the second communications band comprises determining that each of the handheld electronic device and the second device are capable of at least one of generating and interpreting the availability data.

18. The handheld electronic device of claim 17, wherein the routine further comprises instructions for exchanging, based on the determining the second communications band, between the handheld electronic device and the second device of a first identification of the handheld electronic device and a second identification of the second device, the first identification and the second identification each being identifiers that enable the handheld electronic device and the second device, respectively, to be identified on the second communications band.

19. The handheld electronic device of claim 18, wherein the routine further comprises instructions for determining that the handheld electronic device and the second device are capable of at least one of generating interpreting the availability data comprises communication of a signal in the first communications band wherein at least a portion of the signal is adapted to be communicated over the messaging service and indicates that the one of the handheld electronic device and the second device is capable of at least one of generating and interpreting of availability data.

20. The handheld electronic device of claim 18, wherein the first and second identifications are any one or more of telephone numbers, Internet protocol (IP) addresses, personal identification numbers (PINs), e-mail addresses, and instant messaging user identifiers (IDs).

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